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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,474	08/29/2001	Yasuo Shinohara	Q65911	4884

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EXAMINER	
WILLS, MONIQUE M	
ART UNIT	PAPER NUMBER
1745	

MAIL DATE	DELIVERY MODE
08/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/940,474	SHINOHARA ET AL.	
	Examiner	Art Unit	
	Monique M. Wills	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/4/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-8 and 10-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-8 and 10-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

The request filed on June 4, 2007 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/940,474 is acceptable and a RCE has been established. An action on the RCE follows.

The rejectionof claims 1-2 & 4-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al., U.S. Patent 6,447,958 is overcome. However,

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 & 5-8, 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al., U.S. Patent 6,447,958.

Shinohara teaches a non-aqueous electrolyte battery separator comprising a heat-resistant nitrogen-containing aromatic polymer and a ceramic

powder (abstract). With respect to claim 1, Shinohara teaches a separator comprising: a thermoplastic polymer fiber substrate, embracing the instant shut-down layer (col. 5, lines 40-55); a microporous heat-resistant nitrogen-containing aromatic polymer (col. 2, lines 45-55) with a porosity of less than 1Tm (col. 10, lines 40-50); and a thermoplastic spacer formed from a fine particle-like suspension (col. 10, lines 1-10). The particle coating, at column 10, lines 1-10, embraces Applicant' s spacer, because it separates the surface of the heat-resistant layer from an adjacent electrode. See column 10, lines 1-5, and column 13, lines 18-23. With respect to claim 2, the heat resistant layer consists of a para-aramid porous resin (col. 4, lines 23-28). With respect to claim 5, the spacer is formed of particles with a diameter of 1μm (col. 14, lines 45-53). With respect to claims 7 & 8, the spacer is formed by coating a liquid suspension on the surface of a heat-resistant microporous layer (col. 14, lines 44-53). With respect to claim 10, the separator is employed in a non-aqueous electrolyte secondary battery (col. 1, lines 5-10). With respect to claim 11, the spacer is adjacent the cathode, because the spacer forms the top layer of the separator (col. 14, lines 45-53) and the battery is laminated in the order of cathode, separator and anode (col. 13, lines 15-25). With respect to claim 12, the thermoplastic shut-down layer (col. 9, lines 37-41) is coated with a heat-resistant microporous layer (col. 9, lines 40=45), the dried coating is then

reinforced with a fine particle like suspension, embracing the instant spacer. See col. 10, lines 1-10.

Shinohara does not expressly disclose: a shut-down layer(claim 1); a microporous heat-resistant layer (claim 1); having a temperature deflection under load of 18.6 kg/cm^2 pf 100°C (claim 1); electrochemically stable polymer spacer (claim 4). The reference is silent to a spacer thickens of 0.02 to 3 microns and a spacer of fluorine containing polymer (claim 13) .

Yamamoto teaches the equivalence of fluorine polymer and polyolefins as separator materials for electrochemical cells.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the fluorine polymer of Yamamoto as the spacer material of Shinohara, because Yamamoto teaches the equivalence of each material at the time the instant invention was made and it would have been obvious to substitute the fluorine polymer of the polyolefin material (claim 1).

With respect to the spacer thickness of 0.02 to 3 microns (claim 13), it would have been obvious to employ the instant thickness since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

The limitation in claim 1, with respect to separator comprising a shut-down layer, is considered to be an inherent property of substrate as set forth in the prior art a made of thermoplastic polyolefins and polyesters (col. 5, lines 40-50), which have melting temperatures suitable for shut-down (col. 6, lines 15-20). The employment of a polyester substrate is exemplified at column 14, lines 15-20. The limitation in claim 1, with respect to the heat-resistant layer being microporous, is a property of the separator as set forth in the prior art, because the separator of Shinohara has void spaces of less than 1 μm (col. 10, lines 25-50). The limitation in claim 1, with respect to the heat-resistant layer having a temperature of deflection under load of 18.6 kg/cm^2 pf 100°C, is a property of the para-aramid porous resin as set forth in the prior art, because Shinohara employs the same heat-resistant resin material set forth by Applicant. Applicant' s specification at page 6, lines 12-15, discloses that aramide polymers have a temperature of deflection under load of 18.6 kg/cm^2 pf 100°C or more. The limitation in claims 4 & 6, with respect to the spacer being an electrochemically stable polymer (claim 4), wherein the static friction coefficient between the spacer-disposed separator surface and a stainless steel surface ground by a 1000 grit polishing paper is 0.5 or less, is a property of the spacer as set forth in the prior art, because Shinohara employs the same polyolefin spacer material set forth by Applicant.

Response to Arguments

Applicant' s argument with respect to Shinohara not teaching a fluorine polymer spacer is persuasive, and the rejections are withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

8/17/07

STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700